II. REPTILIA.

(Plate v.)

By N. Annandale, *D.Sc.*, *F.A.S.B.*, *Superintendent, Indian Museum.*

Although the reptiles brought back by Mr. Kemp are perhaps less interesting than the Batrachia, this is due solely to the fact that the reptiles of the eastern parts of the Indian Empire have been far more carefully studied than the toads and frogs. The collection consists of 83 specimens of snakes, representing 26 species (of which 3 have not previously been described); 40 specimens of lizards, representing 16 species (of which 1 is new), and a single tortoise; that is to say, 124 specimens in all, representing 43 species.

Part I.—SYSTEMATIC.

List of species collected or observed.

Emydosauria.

1. *Gavialis gangeticus.*

Chelonia.

2. *Kachuga tectum.*

Lacertilia.

3. *Gymnodactylus khasiensis.*
4. *Hemidactylus frenatus.*
5. *Hemidactylus bowringii.*
6. *Hemidactylus brookii.*
7. *Hemidactylus platyurus.*
8. *Draco maculatus.*
9. *Ptyctolaemus gularis.*
10. *Acanthosaura minor.*
11. *Calotes versicolor.*
12. *Calotes jerdoni.*
13. *Ophisaurus gracilis.*
14. *Varanus bengalensis.*
15. *Tachydromus sexlineatus.*
16. *Mabuia macularia.*
17. *Lygosoma indicum.*
18. *Lygosoma courcyanum*, nov.

Ophidia.

19. *Typhlops diardi.*
20. *Typhlops tephrosoma.*
21. *Typhlops diversiceps*, nov.
22. *Trachischium monticola.*
23. *Blythia reticulata.*
24. *Aproaspidops antecursorum*, gen. nov., sp. nov.
25. *Polydontophis collaris.*
26. *Ablabes porphyraceus.*
27. *Ablabes pavo*, nov.
28. *Ablabes frenatus.*
29. *Simotes albocinctus.*
30. *Oligodon erythrorachis.*
31. *Zamenis mucosus.*
32. *Coluber taeniurus.*
33. *Dendrophis gorei.*
34. *Pseudoxenodon macrops.*
35. *Tropidonotus platyceps.*
36. *Tropidonotus khasiensis.*
37. *Tropidonotus piscator.*
38. *Dipsadomorphus gokool.*
39. *Psammodynastes pulverulentus.*
40. *Dryophis prasinus.*
41. *Callophis macclellandii.*
42. *Amblycephalus monticola.*
43. *Trimeresurus monticola.*
44. *Trimeresurus gramineus*

EMYDOSAURIA.

1. **Gavialis gangeticus** (Gmel.).

Boulenger, *Fauna*, p. 3.

Although no specimens of the Gharial were obtained, Mr. Kemp tells me that it is not uncommon at Kobo together with the Gangetic Porpoise (*Platanista gangetica*). Apparently the shortnosed Crocodile (*Crocodilus palustris*) does not make its way so far up the Brahmaputra, although it occurs between Mangaldai in the Darrang district and Gauhati.

CHELONIA.

2. **Kachuga tectum** (Gray).

Boulenger, *Fauna*, p. 43 ; *Cat. Chelonia Brit. Mus.*, p. 58 ; Siebenrock, *Zool. Jahrb. Jena*, 1909, suppl. x, p. 454.

A shell and skull of the genus *Kachuga* were obtained from the Dihang R. below Pasighat and must be referred to this species. The shell, however, which measures 21·7 cm. in length, is narrower than is usually the case, and Mr. Kemp tells me that the soft parts were deep olive in life without reddish marks of any kind. Possibly the specimen represents a local race, but I have examined apparently typical individuals of *K. tectum* from N. E. Assam.

The limits of the range of *K. tectum* are very imperfectly known. It has been recorded from several localities in central and western India and certainly occurs in many different parts of the river-systems of the Indus, Ganges and Brahmaputra. All specimens, however, that I have examined from central India, although several were labelled *K. tectum*, actually represented *K. intermedia*, a very closely allied and somewhat variable form that is common all over the Mahanaddi river-system and also in the lower reaches of the Godavari. I have recently seen large numbers of this form from Cuttack and Sambalpur in Orissa and find that the proportions and outlines of the neural plates are so variable that little reliance can be placed on them in separating the " species " from *K. tectum*. The skulls of the two forms are identical. The only constant feature of difference is therefore colouration, and I am inclined to think that the late Dr. Blanford[1] was right in regarding *K. intermedia* as being only a " variety " (or, as I would prefer to call it, a subspecies) of *K. tectum*. The true *K. tectum* also occurs, according to Siebenrock, in Cochin China, *Pangshura cochinchinensis*, Tirant,[2] being synonymous.

Mr. Kemp tells me that he could hear of only one land-tortoise having been seen during the Expedition and that it was not secured. Terrestrial Chelonia hibernate in northern India, but no species has as yet been recorded from the Himalayas.

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[1] *J.A.S.B.*, (2) xxxix (1870), p. 339, and xlviii (1879), p. 110.
[2] *Etudes Div. Miss. Pavie*, iii, p. 494 (1904).

LACERTILIA.

Fam. GECKONIDAE.

3. **Gymnodactylus khasiensis** (Jerdon).

Boulenger, *Fauna*, p. 68.

Originally described from the Khasi Hills, this lizard appears to have a fairly wide range in the mountains of Assam and northern Burma.

Two specimens were taken by Mr. Kemp at Kobo in December under the bark of a tree, together with a young *Ptyctolaemus gularis.* Others were obtained by the 32nd Sikh Pioneers at an altitude of about 2,000 feet at Upper Rotung.

My own *G. himalayicus*[1] is a very closely related species, differing in its slighter build, more obscure colouration and less compressed digits and also in having a well-defined triangular patch of enlarged scales just behind the praeanal pores. This last point, however, is not a very good character as in some specimens of *G. khasiensis*, of which I have examined a large series, there is a single enlarged scale, or even a pair of such scales, in the same position, although in others the scales are uniformly small.

4. **Hemidactylus frenatus,** D. & B.

A very common lizard at low altitudes in the E. Himalayas, Assam, Burma and the Malay Peninsula ; often found in houses.

A specimen was taken on a lamp-post in the streets of Dibrugarh in November.

5. **Hemidactylus bowringii** (Gray).

Not uncommon at low altitudes in the E. Himalayas and in Assam and Burma, this species is occasionally found in houses. It is, however, more often taken in the jungle.

There is a specimen in the collection from Sadiya.

6. **Hemidactylus brookii,** Gray.

Hemidactylus gleadovii, Boulenger, *Fauna*, p. 86, fig. 27.
Hemidactylus brookii, *id.*, *Ann. Mag. Nat. Hist.*, (7) i, p. 123 (1898), and Annandale, *Rec. Ind. Mus.*, vii, p. 45 (1912).

This species, which is one of the commonest house-lizards all over the plains of India (in northern Madras certainly the commonest), has a very wide distribution in the tropics but apparently avoids mountainous regions. The highest altitude from which I have seen a specimen is 4,500 ft., and this was on the isolated mountain Parésnath in Chota Nagpur, now in the new Province of Bihar and Orissa. Several specimens were obtained at Sadiya.

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[1] *J.A.S.B.*, 1906, p. 287, and *Rec. Ind. Mus.*, I, p. 152, pl. vi, figs. 1, 1*a*, 1*b*, 1*c*, 1*d* (1907).

H. brookii is by no means always domestic in its habits, but individuals found living wild among rocks or in jungle are as a rule darker in colour and somewhat stouter in form than those which inhabit human dwellings. In either case the species is mainly nocturnal.

H. subtriedroides[1] from Upper Burma only differs from *H. brookii*, of which it should probably be regarded as a variety, in its rather stouter habit and much larger dorsal tubercles. The tubercles are extremely variable in size even within the strict limits of *H. brookii*, and less frequently vary also in number. There is in the Indian Museum a specimen from Bangalore on which there are only two dorso-lateral rows of tubercles on each side, the middle region of the back being perfectly smooth. This individual was taken by myself, together with a normal one, on the post of a railing.

7. **Hemidactylus platyurus** (Schneid.).

This gecko is common in the E. Himalayas, in which it is found as a rule at rather higher altitudes than the two preceding species. It is widely distributed in the Indo-Malayan and Malayan countries. So far as I am aware the western limit of its range is situated in Nepal, my own *H. nepalensis*[2] being undoubtedly synonymous. In the Darjiling district *H. platyurus* is often found in houses, but it is naturally an inhabitant of tree-trunks.

An unusually dark specimen was taken by Mr. Kemp at Pasighat under the bark of a tree.

Fam. AGAMIDAE.

8. **Draco maculatus** (Gray).

Boulenger, *Fauna*, p. 112.

This species is widely distributed in Assam, Burma, the Malay Peninsula and Yunnan, the western limit of its range being situated near the point in Assam north of the Brahmaputra at which that river bends southwards. There are three specimens in Mr. Kemp's collection :—

16881	Janakmukh (alt. 600 ft.)	Capt C. E. Edward-Collins.
16882	Yembung (alt. 1,100 ft.) : "found in a hut in camp."	S. W. Kemp.
16997	Pasighat (alt. 500 ft.)	W. Cave-Brown.

Mr. Kemp describes the colouration of No. 16882, an immature male, as follows :—" Colour of back mottled warm brown, dark brown and black. Neck above with two elliptical black markings and a pair of black spots. ' Wings ' above orange-brown. Belly dull greenish yellow ;

[1] Annandale, *Ann. Mag. Nat. Hist.*, (7) xv, p. 29 (1905), and *J.A.S.B.*, 1905, pl. ii, fig. 1.

[2] *Rec. Ind. Mus.*, i, p. 151, pl. vi, figs. 2, 2*a*, 2*b*, 2*c* (1907).

bright yellow beneath and on either side of pouch. 'Wings' beneath dull yellowish green, the orange colouring having a tendency to show through. Lateral neck-flaps orange beneath. Predominant headcolour very dark brown."

The only other species of *Draco* as yet found in Assam is *D. norvillii*, Alcock,[1] a single specimen of which, now in the Indian Museum, was taken at Dum Duma in N.-E. Assam some years ago. This species is closely related to *D. blanfordii*, Boulenger, from which it differs in having the tympanum completely covered with small scales. From *D. maculatus* it is easily distinguished by its longer snout and by the broad patches of enlarged scales scattered on each side of the back along the base of the alar membrane.

9. **Ptyctolaemus gularis**, Boulgr.

Boulenger, *Fauna*, p. 117 ; Annandale, *J.A.S.B.*, 1905, p. 85 ; Wall, *Journ. Bomb. Nat. Hist. Soc.*, xviii, p. 505.

This is a very rare lizard in collections. I have only seen three specimens hitherto, two of them from Assam N. of the Brahmaputra. Major F. Wall, however, states that the species is common at Shillong in the Khasi Hills (4,900 ft.) and our third specimen is from that locality. The western limit of its range is apparently the same as that of *Draco maculatus*. It is possible that both will be found in the Buxa *duars* ; we have both in the Indian Museum from Goalpara (Dhubri). *Ptyctolaemus* is certainly not indigenous in Calcutta.

Mr. Kemp found a very young specimen at Kobo in November ; although probably not long hatched (or born), it bore the characteristic grooves on the side of the neck. Adults were taken at Kobo by Capt. de Courcy and at Rotung by Mr. Kemp, who did not obtain the species at altitudes of over 1,300 ft.

10. **Acanthosaura minor** (Gray).

Boulenger, *Fauna*, p. 127.

This species is known from both Sikhim and the Khasi Hills. It is, however, rare in the Darjiling district. A small specimen was obtained at Upper Rotung (alt. *ca.* 2,000 ft.) in January.

11. **Calotes versicolor** (Daud.).

Boulenger, *Fauna*, p. 135, fig. 42 ; Annandale, *Rec. Ind. Mus.*, vii, p. 46.

The only specimen in the collection is a very young one obtained at Sadiya.

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[1] *J.A.S.B.*, (2) lxiv, p. 14, pl. iii (1895).

12. **Calotes jerdonii,** Günth.

Boulenger, *Fauna*, p. 137.

Common in the Khasi Hills ; Col. Godwin-Austen obtained specimens in the Dafla Hills to the west of the Abor country, in which Mr. Kemp collected it at Komsing, Yembung and Balek. Both his specimens and Col. Godwin-Austen's are quite typical.

Fam. ANGUIDAE.

13. **Ophisaurus gracilis** (Gray).

Boulenger, *Fauna*, p. 159, fig. 47.

A common species in the E. Himalayas at altitudes of between 4,000 and 5,000 ft.; it also occurs in the Khasi Hills, in Upper Burma and Yunnan and probably in the hills of Pegu.

A number of individuals of different ages were taken in the neighbourhood of Upper Rotung and Upper Renging (2,000—2,150 ft.) by the 32nd Pioneers while road-making. The large specimens have the back of a bright brick-red with very conspicuous blue cross-bars ; on the tail the red fades to dull brown. The young are white with two blue-black stripes down each side and a somewhat indistinct and broken mid-dorsal stripe of the same colour ; the latter is crossed at intervals by transverse rows of very small black spots, and there are rather larger black spots scattered on the lips and snout.

Fam. VARANIDAE.

14. **Varanus bengalensis** (Daud.).

All over India and Ceylon except at high altitudes ; also in Upper Burma.

A skin was obtained at Kobo by Col. (now Brigadier-General) D.C.F. Macintyre and presented by him to the Indian Museum.

Fam. LACERTIDAE.

15. **Tachydromus sexlineatus,** Daud.

Boulenger, *Fauna*, p. 169 ; *Fasciculi Malayenses*, i, p. 158 ; Annandale, *J.A.S.B.*, 1905, p. 140.

This lizard is widely distributed in the damper parts of the Oriental Region. It is not found in Peninsular India.

A specimen was taken at Janakmukh (alt. 600 ft.) under the bark of a tree in December. It was probably hibernating, as the species is usually found among long grass.

Fam. SCINCIDAE.

16. **Mabuia macularia** (Blyth).

A very common skink all over the plains of India, Burma and Ceylon. Two specimens were taken at Sadiya in November, " under chips of wood."

17. **Lygosoma indicum** (Gray).

Lygosoma indicum and *L. zebratum*, Boulenger, *Fauna*, p. 195.
Lygosoma indicum, *id.*, *Ann. Mus. Genova* (2nd ser.), xiii, p. 319.

A very common species in the foot-hills of the E. Himalayas and also in hilly country in Assam and Burma.

Specimens were taken under stones in the neighbourhood of Rotung and Upper Rotung (1,300 to 2,000 ft.) in December, January and March.

18. **Lygosoma courcyanum**, sp. nov.

(Plate v, fig. 5.)

Subgenus *Hinulia*. Allied to *L.* (*Hinulia*) *cacharense*[1] from Assam but much more slender and with shorter limbs.

Habit slender, lacertiform ; the distance between the axilla and the groin nearly twice that between the tip of the snout and the fore limb. Tail nearly twice as long as head and body. Total length 100 mm.

Head small, narrow, triangular ; snout pointed ; loreal region vertical ; lower eye-lid scaly ; ear-opening subcircular, much smaller than eye, without lobules ; nostril pierced in a single nasal. Rostral much broader than deep, forming an extensive suture with fronto-nasal ; fronto-nasal undivided, much longer than praefrontals ; no supranasals ; praefrontals separate short ; frontal shorter than its distance from tip of snout, a little shorter than the parietals ; its greatest breadth to its length as 7 to 9 ; parietals not meeting behind interparietal, forming a lengthy suture ; interparietal small ; a single pair of enlarged nuchals ; 4 large, subequal supraoculars ; 7 upper labials, 4th, 5th and 6th under eye.

Scales of body smooth, imbricate, in 24 rows ; the ventrals slightly larger than the dorsals ; two large praeanals.

Limbs short but well-formed, separated by a considerable distance where adpressed. Toes not compressed, of moderate length ; 11 smooth lamellae under 4th toe.

Colouration.—Dorsal surface olive-brown minutely speckled with black ; tail rather darker than back ; a narrow pale band extending on each side from above the eye to the base of the tail ; a rather broader black band running immediately below it ; sides yellowish speckled with black ; lateral surface of tail suffused with slate grey ; ventral surface yellowish, speckled with slate-grey on tail.

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[1] Annandale, *J.A.S.B.*, 1905, p. 145.

Dimensions of type :—

Total length	100 mm.
Length of head and body	35 ,,
Length of head	8 ,,
Breadth of head	4 ,,
Fore limb	9 ,,
Hind limb	13 ,,

Type.—No. 16900 in the Indian Musuem register of Reptiles and Batrachia.

Habitat.—Two specimens were taken by Capt. the Hon. M. de Courcy, one at Rotung (1,300 ft.), the other at Upper Rotung (*ca*. 2,000 ft).

OPHIDIA.

Mr. Kemp asks me to state that a very large proportion of the snakes in his collection were captured by the officers and men of the 32nd Sikh Pioneers at the instance of Capt. the Hon. M. de Courcy. They were found while road-making, chiefly in December and January, and were probably hibernating at the time. Other snakes were presented by Capt. J. S. O'Niell, Capt. F. H. Stewart and Capt. R. S. Kennedy of the Indian Medical Service.

Fam. TYPHLOPIDAE.

19. **Typhlops diardi,** Schleg.

Boulenger, *Fauna*, p. 238, fig. 70.

A considerable number of specimens of this common Himalayo-Burmese species were taken at Kobo, Pasighat, Janakmukh and Balek, several of them having been found crawling about on the surface in camp after rain.

T. diardi occurs all over Assam and Burma and is also found in the Himalayas, Siam and other adjacent countries.

20. **Typhlops tephrosoma,** Wall.

Wall, *Journ. Bombay Nat. Hist. Soc.*, xviii, p. 314.

A small specimen taken by the 32nd Sikh Pioneers at Janakmukh agrees well with Major Wall's description of the type from the Khasi Hills.

21. **Typhlops diversiceps,** sp. nov.

(Plate v, fig. 1.)

This species belongs to the same group as *T braminus* and *T beddomii*, but the anterior nasal is not in contact with the praeocular and the posterior nasals do not meet behind the rostral.

Snout rounded, projecting. Nostril lateral, nasal completely divided; rostral barely reaching the level of the eyes, not half as wide as snout; upper head-scales about twice as large as body-scales, trans-

verse; anterior nasal widely separated from praeocular, in contact with first labial below; posterior nasal much larger, in contact with second labial, not meeting its fellow on the top of the head; eyes moderately distinct; praeocular larger than ocular, in contact with second and third labials; ocular in contact with third and fourth labials; 4 upper labials. Diameter of body 40 times in total length; tail longer than broad, ending in a minute spine; 18 scales round body.

Colour dark olive-brown, slightly paler on ventral surface. Dorsal surface of head chestnut, ventral surface pale yellow; the latter shade extending upwards on either side to the level of the eyes in the form of a narrow triangle, very clearly defined posteriorly on the throat.

Length 160 mm.: length of tail 3 mm.

Type.—No. 16864, Ind. Mus.

Locality.—Pasighat (500 ft.) 25-iii-12. (Capt. R. S. Kennedy, I.M.S.)

Fam. COLUBRIDAE.

Subfamily COLUBRINAE.

22. **Trachischium monticola** (Cantor)

Boulenger, *Fauna*, p. 286.

A common snake in the hills of Assam, less abundant in the E. Himalayas. Ten specimens were taken by the 32nd Sikh Pioneers while road-making in the neighbourhood of Upper Rotung (alt. *ca.* 2,000 ft.) in January. Capt. de Courcy took another in the Sirpo valley near Renging.

23. **Blythia reticulata** (Blyth).

Boulenger, *op. cit.*, p. 287, fig. 92.

Three specimens were taken at Upper Renging, at Upper Rotung and in the Sirpo valley near Renging. The species, which is the only one in the genus, is characteristically Assamese. Fresh adult specimens are almost black in colour with a beautiful deep-blue iridescence, the pale markings becoming inconspicuous with age.

Aproaspidops, gen. nov.

The new genus is allied to *Trirhinopholis* and *Plagiopholis*, Boulenger, both of which are only known from Burma. It thus belongs to a peculiar little group of monotypic genera that includes *Blythia* and the two just mentioned and inhabits hilly country in Burma and Assam. *Aproaspidops* can be recognized easily by the fact that there is an azygous shield between the rostral and the supranasals and also a small postnasal on each side. There is no praeocular and no loreal, unless the latter name should be applied to the small scale I have called the postnasal.

Maxillary moderate, with about 20 teeth, which decrease slightly in size from before backwards; mandibular teeth similar to maxillary. Head not distinct from neck; eye small, with round pupil; nostril pierced between two nasals, the posterior of which is followed by a small scale (postnasal) in contact with the supranasal, praefrontal and first upper labial. Praefrontal entering the eye and in contact with upper labials; no praeocular; rostral separated from supranasals by a triangular azygous shield. Scales smooth, without apical pits, imbricate, in 12 straight rows; ventrals rounded. Tail short; subcaudals in two rows.

24. **Aproaspidops antecursorum**, sp. nov.

(Plate v, fig. 2.)

Snout moderate, rounded. Rostral much wider than deep, just visible from above, much deeper than the shield which separates it from the supranasals; the latter completely divided, about half as long as the praefrontals, which are also completely divided; frontal about $1\frac{1}{3}$ times as long as broad, about as long as its distance from the snout, much shorter than the parietals. Nostril between two small, deeply concave scales, separated from the first labial; postnasal triangular, smaller than the two nasals of one side together. Praefrontal in contact with second and third upper labials, the latter and the fourth entering the eye; no subocular; a single large postocular; supraocular much longer than deep; 6 upper and 6 lower labials; loreals 1+2. Two pairs of chin-shields, posterior pair very short, in contact with the fourth pair of labials; the first pair in contact with three pairs of labials, first pair of labials forming a long suture behind the mental. Ventrals 136; subcaudals 16; anal divided; tail ending in a sharp spine.

Colour dark olive, each body-scale with a slightly darker border; ventrals and subcaudals with pale borders; an incomplete white collar extending over the greater part of the neck on each side some distance behind the gape.

Length 162 mm.: length of tail 12 mm.

Type.—No. 16844, Ind. Mus.

Locality.—Janakmukh, 600 ft.: 13-xii-11.

The single small, perhaps immature, specimen was taken by the 32nd Sikh Pioneers while road-making. It closely resembles young *Blythia reticulata* in appearance but can easily be distinguished by its circular pupil and by the extra scales behind the rostral and the nasals.

25. **Polydontophis collaris** (Gray).

Boulenger, *op. cit.*, p. 302.

A common snake all over the Himalayas up to 10,000 feet, in Assam, Upper Burma, etc. Specimens were taken in the Sirpo valley near Renging and at Kobo by Capt. de Courcy. They represent the typical form.

26. **Ablabes porphyraceus** (Cantor).

Boulenger, *op. cit.*, p. 308.

A common Malayo-Himalayan snake probably not found at great altitudes. Specimens were taken at Balek and between Kalek and Misshing by Capt. Wilson and Mr. Kemp respectively.

27. **Ablabes pavo,** sp. nov.

(Plate v, fig. 3.)

A magnificent species easily recognized by the large black and yellow ocelli on its back, but also to be distinguished by numerous scale-characters, notably by the large number of ventrals.

Rostral much wider than deep, visible from above; supranasals distinct, about half as long as praefrontals, which are also distinct; frontal 1⅓ times as long as broad, a little shorter than its distance from the tip of the snout, almost as long as the parietals; nasal completely divided, extending backwards as far as the suture between the second and third labial; no distinct loreal; a single praeocular; two post-oculars, only the upper one in contact with the parietal; 7 upper labials, the third and fourth entering the eye; temporals 2+2; the shields on the sides of the head minutely pitted; two pairs of chin-shields, the anterior pair in contact with three pairs of labials, the posterior pair in contact with only one pair. Scales in 19 rows. Ventrals 233; sub-caudals 80; anal and subcaudals divided.

Colour.—Sides and back pale bluish grey, each scale bearing an irregular patch of peach colour; back ornamented with a row of large black longitudinally oval rings, each with a yellow centre and separated one from another by only a short interspace; on the tail the yellow centres of the rings break up into small spots and finally at the tip, disappear altogether; about 50 rings in all; sides with irregular zig-zag black, yellow-edged vertical bars; ventral surface yellowish with numerous black cross-bars which are usually interrupted in the middle line; head black with a broad yellow bar across the snout, a second across the vertex behind the eyes and a third across the nape, the two latter being ʌ-shaped; lips, chin and throat yellow with large black spots.

Length 640 mm.: length of tail 108 mm.

Type.—No. 16797, Ind. Mus.

Locality.—Upper Rotung; taken by 32nd Sikh Pioneers while road-making, 13-xii-11.

28. **Ablabes frenatus** (Günth.).

Boulenger, *Fauna*, p. 306.

A characteristic Assamese species. Three specimens were taken at Upper Rotung (2,000 ft.) in January. Two were found while road-making, while one was sitting coiled up in the middle of a path.

29. **Simotes albocinctus** (Cantor).

Boulenger, *Fauna*, p. 312.

Not uncommon in the hills of Assam and Burma. Wall[1] has described, under the name *juglandifer*, a peculiar variety distinguished mainly by colouration but now regarded by him as a distinct species. It is from the E. Himalayas and Assam. Specimens of the typical form were taken by Capt. de Courcy at Kobo and in the Sirpo valley near Renging.

30. **Oligodon erythrorhachis,** Wall.

Wall, *Journ. Bombay Nat. Hist. Soc.*, xix, p. 923, pl.

Two specimens from Upper Rotung (alt. *ca.* 2,000 ft.) taken in December by the 32nd Sikh Pioneers must be referred to this species. Both, however, differ in colouration from the type. The smaller specimen measures 300 mm. in length and is of a brick-red colour with numerous white, black-edged cross-bars on the body and tail. There are faint traces of a dark mid-dorsal line and the head and ventral surface are marked as in Major Wall's figures. The second specimen is larger, measuring 510 mm., and differs from the smaller one in being of a deep crimson colour and having the cross-bars on the body and tail relatively broader and slate-grey instead of white.

31. **Zamenis mucosus** (Linn.).

Boulenger, *Fauna*, p. 324.

A small specimen of the Common Rat-Snake was taken at Janakmukh by Capt. O'Neill.

32. **Coluber taeniurus** (Cope).

Boulenger, *Fauna*, p. 333 ; *Fascic. Malay.*, i, p. 162.

Two specimens were taken in January at Upper Rotung by the 32nd Sikh Pioneers while cutting a road. The species has a somewhat curious distribution, ranging from Darjiling into not only south-western but also northern China. In the Malay Peninsula it is usually found in caves feeding on bats. Cavernicolous individuals are always very pale in colour, but it is by no means certain that this is not due to the direct effect of lack of light on the organism.

33. **Dendrophis gorei,** Wall.

Wall, *Journ. Bombay Nat. Hist. Soc.*, xix, p. 829, pl., fi. 1–3 (1910).

I doubt whether this is more than a local race of *D. pictus* peculiar to the north-east corner of Assam and the neighbouring foot-hills. There

[1] *Journ. Bombay Nat. Hist. Soc.*, xix, pp. 3, 8, and xx, p. 1162, fig.

are three specimens in the Abor collection which agree well with Major Wall's specimen from Dibrugarh now in the collection of the Indian Museum. They are from Kobo (400 ft.), from between Janakmukh and Balek and from the Siyom valley below Damda (*ca.* 1,400 ft.).

34. **Pseudoxenodon macrops** (Blyth).

Boulenger, *Fauna*, p. 340.

A specimen was taken near Sidi stream (alt. *ca.* 2,000 ft.) by the 32nd Sikh Pioneers. The species is very common in the Darjiling district from the base of the foot-hills up to 5,000 ft., occurring also in the hills of Assam and Burma but apparently in smaller numbers.

35. **Tropidonotus platyceps,** Blyth.

Boulenger, *Fauna*, p. 344.

A very variable species common in the Himalayas up to 10,000 ft. ; also occurs in the Khasi Hills and the mountains of Burma. A specimen was taken at Upper Rotung.

36. **Tropidonotus khasiensis,** Boulgr.

Boulenger, *Fauna*, p. 344, and *Ann. Mus. Genova* (2nd ser.), xiii, p. 322.

A scarce species hitherto only found in the Khasi and Karin Hills. One was taken at Rotung by Capt. de Courcy.

37. **Tropidonotus piscator** (Schneid.).

Boulenger, *Fauna*, p. 349.

Young specimens of this very common and widely distributed species were taken at Rotung and Upper Rotung (1,300 and *ca.* 2,000 ft.). It occurs in the W. Himalayas up to at least 4,500 ft.

Subfamily DIPSADOMORPHINAE.

38. **Dipsadomorphus gokool** (Gray).

Dipsas gokool, Boulenger, *Fauna*, p. 360.
Dipsadomorphus gokool, id., Cat. Snakes Brit. Mus., iii, p. 64 (1895).

A specimen was taken at Dibrugarh. It is not improbable that this snake is actually restricted to Assam, for Cantor's localities are notoriously inaccurate and the record of this species from Penang apparently rests on a specimen from his collection in the British Museum. Bengal and Assam were not clearly distinguished by many of the older naturalists who wrote on Indian reptiles.

39. **Psammodynastes pulverulentus** (Boie).

Boulenger, *Fauna*, p. 363, and *Cat. Snakes Brit. Mus.*, iii, p. 173.

Specimens, 8 in all, were taken at the following places during the Expedition :—Kobo, Balek, Rotung, the Sirpo valley near Renging and Renging. The species is widely distributed in the damper parts of the Oriental Region but does not occur in Peninsular India. Mr. Kemp's series exhibits a remarkable range of colour-variation, no two individuals being precisely alike in colouration.

40. **Dryophis prasinus**, Boie.

Boulenger, *Fauna*, p. 369.

A widely distributed species in the E. Himalayas, Assam, Burma, Indo-China and Malaysia. Specimens were taken at Janakmukh by Capt. O'Neill and Capt. de Courcy, at Rotung by Capt. F. H. Stewart and at Balek by Capt. Wilson. All belong to the typical leaf-green form.

Subfamily ELAPINAE.

41. **Callophis macclellandii** (Reinh.).

Boulenger, *Fauna*, p. 385, and *Cat. Snakes Brit. Mus.*, iii, p. 398.

A very common snake in the hills of Assam, occurring also in the E. Himalayas, Burma, S. China, etc. Two specimens of the typical form were taken at Upper Rotung (2,000 ft.) by the 32nd Sikh Pioneers.

Fam. AMBLYCEPHALIDAE.

42. **Amblycephalus monticola** (Cantor).

Boulenger, *Fauna*, p. 415.

This snake, which occurs in the E. Himalayas, the hills of Assam and the Nicobar Is., is evidently very common in the Abor foot-hills. The 32nd Sikh Pioneers took 12 specimens of different sizes while road-making in the neighbourhood of Upper Rotung in January. They also caught specimens at Rotung and in the Sirpo valley.

Fam. VIPERIDAE.

43. **Lachesis monticola** (Günth.).

Trimeresurus monticola, Boulenger, *Fauna*, p. 426.
Lachesis monticola, *id.*, *Cat. Snakes Brit. Mus.*, iii, p. 548.

Widely distributed in the E. Himalayas, the mountains of Assam, Burma and Yunnan and in hilly districts of the Malay Peninsula. Two specimens were obtained, one at Rotung, the other at Upper Rotung.

Mr. Kemp tells me that he heard it stated on several occasions that Russel's Viper (*Vipera russeli*) occurs in the Abor country but that these statements probably referred to *Trimeresurus monticola.*

44. **Lachesis gramineus** (Shaw).

Trimeresurus gramineus, Boulenger, *Fauna*, p. 429.
Lachesis gramineus, *id.*, *Cat. Snakes Brit. Mus.*, iii, p. 554.

A small specimen of the typical green form was taken at Kobo by Capt. Mitchell. The species is common in the hills of Assam, Burma, Malaysia, etc. and also occurs in the Himalayas.

PART II.—GEOGRAPHICAL.

The following species are only represented in Mr. Kemp's collection by specimens obtained at Dibrugarh or Sadiya or observed or caught in the Dihong R. :—*Gavialis gangeticus*, *Kachuga tectum*, *Hemidactylus frenatus*, *H. bowringii*, *H. brookii*, *Calotes versicolor*, *Mabuia macularia* and *Dipsadomorphus gokool.* These 8 species cannot, therefore, be regarded as having been proved to be inhabitants of the Abor foot-hills. The Indian Museum is, however, fortunate in possessing the collection of reptiles made in the Dafla foot-hills, which are situated a short distance to the west of the Abor country, by Col. Godwin-Austen many years ago, and it will add interest to geographical speculations about the fauna of the latter country if we combine the list of Mr. Kemp's collection with one of that obtained by Col. Godwin-Austen.

GEOGRAPHICAL LIST OF THE REPTILES KNOWN FROM THE HIMALAYAN FOOT-HILLS E. OF BHUTAN.

Name.	Assam.	Sikhim.	Burma.	REMARKS.
Nicoria tricarinata ..	x	..	..	Taken by Col. Godwin-Austen in the Dafla Hills ; also known from Assam north of the Brahmaputra and from Chota Nagpur in Peninsular India.
Gymnodactylus khasiensis	x	..	x	Khasi Hills and Upper Burma.
Hemidactylus frenatus ..	x	x	x	Common in the Malay Peninsula ; taken in the Dafla Hills ; very widely distributed.

Name.	Assam.	Sikhim.	Burma.	REMARKS.
Hemidactylus platyurus ..	x	x	x	The Himalayas from the Nepal Valley eastwards ; also Ceylon, Malayasia, etc.
Draco maculatus ..	x	..	x	Malaya Peninsula, W. China, etc.
Ptyctolaemus gularis ..	x	..	..	Assam N. of Brahmaputra and Khasi Hills.
Acanthosaura minor ..	x	x	..	E. Himalayas and Khasi Hills.
Calotes jerdonii ..	x	..	..	Khasi Hills ; both Dafla and Abor Hills.
*Japalura andersoniana** [1]	..	..	..	Only known from the Dafla Hills.
*Salea austeniana** [2] ..	..	..	..	Ditto.
Ophisaurus gracilis ..	x	x	x	Perhaps only in *Upper* Burma.
Varanus bengalensis ..	x	..	x	I cannot find any record of the occurrence of this common Indian species in Sikhim, but it probably does occur there.
Tachydromus sexlineatus	x	x	x	I have not seen this species in the Himalayas, but it is said to occur in Sikhim : it is also found in S. China, the Malay Peninsula, etc.
Lygosoma indicum ..	x	x	x	A common species in Burma, not known from the Malay Peninsula.
*Lygosoma courcyanum,** sp. nov.	..	..	..	Only known from the Abor Hills.
Lygosoma albopunctatum	x	..	x	Also from Peninsular India, Malay Peninsula, etc.
Typhlops braminus ..	x	x	x	Very widely distributed ; known from the Dafla Hills.

[1] Annandale, *J.A.S.B.*, 1905, p. 85.
[2] *Id.*, *Rec. Ind. Mus.*, II, p. 37 (1908).

Name.	Assam.	Sikhim.	Burma.	REMARKS.
Typhlops tephrosoma ..	x	..	..	Only known from the Khasi Hills.
Typhlops diardi ..	x	x	x	Also in Indo-China, Siam, etc.
Typhlops diversiceps,* sp. nov.	..	..	..	Only known from the Abor Hills.
Trachischium monticola ..	x	x	..	Common in the E. Himalayas and the hills of Assam.
Aproaspidops antecursorum,* gen. nov.	..	..	..	Genus only known from the Abor Hills.
Blythia reticulata ..	x	..	..	Common in the hills of Assam.
Polydontophis collaris ..	x	x	x	Also in W. Himalayas and S. W. China.
Ablabes porphyraceus ..	x	x	x	Also in Yunnan, Malay Peninsula, Sumatra, etc.
Ablabes pavo, sp. nov. ..	..	..	..	Only known from the Abor Hills.
Ablabes frenatus ..	x	..	..	Hills of Assam.
Simotes albocinctus ..	x	x	x	Common in Assam.
Oligodon erythrorhachis ..	x	..	..	Hitherto only known from hills S. of Brahmaputra.
Zamenis mucosus ..	x	x	x	A widely distributed Oriental species.
Coluber taeniurus ..	x	x	x	From the E. Himalayas to Yunnan; the Malay Peninsula ; also Manchuria and Indo-China.
Dendrophis gorei ..	x	..	..	Only known from the N. E. corner of Assam.
Pseudoxenodon macrops ..	x	x	x	Hill species but not found at great altitudes.
Tropidonotus platyceps ..	x	x	x	Found up to 10,000 ft.
Tropidonotus khasiensis ..	x	..	x	Found in Karin and Khasi Hills.
Tropidonotus piscator ..	x	x	x	Widely distributed in Oriental Region.

Name.	Assam.	Sikhim.	Burma.	REMARKS.
Psammodynastes pulverulentus.	x	x	x	Also in Indo-China, Siam, the Malay Peninsula and Archipelago, etc.
Dryophis prasinus ..	x	x	x	Ditto.
Callophis macclellandii ..	x	x	x	Also in Nepal, S. China, etc.
Amblycephalus monticola	x	x	..	Also in Nicobars.
Trimeresurus monticola ..	x	x	x	Also in Yunnan, Malay Peninsula, etc.
Trimeresurus gramineus	x	x	x	Also in Siam, S. China, Indo-China, the Malay Peninsula and Archipelago.

The only tortoise in this list (*Nicoria*[1] *tricarinata*) is one of a small group of more or less terrestrial Chelonia that occur both in Chota Nagpur in Peninsular India and in the northern part of Assam but apparently not in any intermediate locality. It is, however, evident that we know as yet very little about the distribution of the Indian land-tortoises.

The genera of lizards and snakes that are known to occur in the foot-hills N. of the Brahmaputra and E. of Bhutan are for the most part widely distributed. Only one appears to be endemic, *viz.*, the new genus *Aproaspidops*, which is allied to the Burmese genera *Trirhinopholis*[2] and *Plagiopholis*[3]. The genera *Blythia* and *Ptyctolaemus* are characteristically Assamese, while *Pseudoxenodon*, *Japalura* and *Draco* are restricted to the damper parts of the Oriental Region, the last-named being a characteristically Malaysian genus also found in S. India, while the two first are essentially continental in distribution. The genus *Salea* only occurs in the foot-hills E. of Bhutan, in Lower Burma and in S. India, being thus almost analogous in its range to the Ranid genus *Micrixalus*.

If we separate out the 42 species in the list into geographical groups as was done in the case of the Batrachia (p. 34 *antea*) we find that the following percentages can be calculated :—

I. Species of wide distribution in the Himalayas, Assam, Burma and Indo-China or Malaysia 16=38%
II. Species of very wide general distribution 6=14%

[1] Stejneger (*Proc. Biol. Soc. Wash.*, xv, p. 238 (1902), and Siebenrock (*Zool. Jahrb. Jena*, 1909, suppl. x, p. 494) point out that by the strict letter of the law of priority the name of this genus should be *Geoemyda*.

[2] Boulenger, *Cat. Snakes Brit. Mus.*, i, p. 419.

[3] *Id.*, *ibid.*, p. 301.

III.	Apparently endemic species ..	6=14%
IV.	Species only known hitherto from Assam	7=16·5%
V.	Assamo-Burmese species	3= 7%
VI.	Himalayo-Assamese species	3= 7%
VII.	Species only known from Assam and Peninsular India	1=2·5%

There are no exclusively Himalayan species in the list and none that have hitherto been known only from Burma. If we compare this analysis with that of the Batrachian fauna of the Abor Hills published on p. 35 of this volume, the chief apparent difference is that the endemic forms appear to be fewer and the representatives of what I have called elsewhere the Malayo-Himalayan fauna much more numerous. This may be due in part to the fact that the lizards and snakes of Assam are much better known than the frogs and toads, and in part to the wider distribution of species in the former groups. In the main the results are strictly comparable in what may be regarded as their essential feature, *viz.*, in illustrating the non-Himalayan nature of the Abor fauna. Unfortunately we know almost nothing of the reptiles and Batrachia of Bhutan, but the little that we do know would suggest that the eastern boundary of the true Himalayan fauna is formed by the R. Tista, which flows down south through the Himalayas to the west of Bhutan. This river, at any rate in its present course, is apparently a much more ancient one than the existing Brahmaputra.

The reptiles of the extreme east of the Himalayas, although they have strong Assamese affinities, are by no means identical with those of the Khasi Hills. It is particularly noteworthy that the species of *Japalura* which occur in the Dafla Hills is not nearly so closely related to the common *J. variegata*[1] of Sikhim as that species is to *J. planidorsata* of the Khasi Hills, and none of the six apparently endemic species have, so far as we are aware, close allies in the other mountains of Assam.

We may say therefore that the reptiles of the Abor foot-hills agree with the Batrachia in differing considerably from those of the foot-hills immediately to the west of Bhutan and in including a well-marked endemic element, but that they appear to be more closely connected with the fauna characteristic of the damp jungles of the E. Himalayas, Assam, Burma, Indo-China and the Malay Peninsula. It is to this fauna that it is convenient to apply the term " Malayo-Himalayan." Probably the comparative dryness of the forests on the foot-hills west of Nepal has prevented many damp-loving animals of Malayan origin from penetrating further afield in a westerly or north-westerly direction, while a smaller contingent has been stayed by the course of the R. Tista.

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[1] I was wrong in stating that this species occurs in Assam (J.A.S.B., 1905, p. 92), having been misled by badly preserved specimens of *J. planidorsata*.

APPENDIX.

DESCRIPTIONS OF THREE NEW INDIAN LIZARDS.

As a matter of convenience I take this opportunity to describe three lizards, one of which is of particular interest in connection with the Abor fauna in that it comes from the Bengal frontier of Bhutan. The other two are from the Bombay Presidency and Sylhet respectively.

Hemidactylus platyceps, sp. nov.

Habit slender ; depressed ; size small.

Head narrowly ovoid, strongly depressed and very shallow ; snout bluntly pointed, about as long as distance between eye and ear ; eye small ; ear-opening minute, longitudinally oval. Rostral much more than twice as broad as deep, feebly cleft above ; nostril between rostral, first labial and three small scales ; 9 upper, 7 lower labials ; snout covered with strongly keeled granules, rest of head with smaller and slightly irregular convex granules ; two pairs of chin-shields, followed on each side by several irregular scales ; first pair of chin-shields forming a long suture behind mental ; throat-scales small, smooth, imbricate.

Scales.—Back covered with small convex granules of somewhat unequal size, with 12 longitudinal rows of much larger strongly keeled tubercles ; these much larger than ear-opening ; dorsal surface of limbs covered with unequal keeled granules ; ventral scales rather large, smooth, imbricate ; tail covered above and below with smooth imbricate scales which are a little larger on the ventral than on the dorsal surface.

Limbs short, the adpressed hind limb barely reaching the axilla. Fingers and toes short, free ; 8 lamellae under 4th, 4 under inner toe. Distal joint of inner digit extremely short.

Tail short, somewhat depressed as a whole, triangular in vertical section.

Colouration.—Dorsal surface dull olivaceous, with a dark longitudinal line extending on either side from the tip of the snout above the eye to the base of the tail ; this line followed below by a pale one and then by a second dark one ; two very narrow dark lines separated by a pale interspace below the second broader one on the sides of the belly ; tail dark olivaceous ; ventral surface yellowish green, suffused with dark olivaceous on the tail.

Total length	70 mm.
Length of head and body	33 ,,
Length of tail	37 ,,
Length of head	10 ,,
Length of fore limb	10 ,,
Length of hind limb	8 ,,

Habitat.—Bilimora, Bombay Presidency (*T. Bainbrigge Fletcher*), 13-ii-11.

Type.—No. 17020, Ind. Mus. (♀).

We are indebted to Mr. T. Bainbrigge Fletcher for the unique specimen of this curious little lizard, which appears to be very distinct from any hitherto described. It belongs to the section of the genus typified by *H. frenatus*, D. & B., and is perhaps nearer the S. Indian *T. reticulatus*, Beddome, than any other species. It may be distinguished from that form by its flattened head, broad rostral and longitudinal dark stripes.

Japalura bengalensis, sp. nov.

(Plate v, fig. 4.)

Japalura yunnanensis, Annandale (*nec* Anderson), *J.A.S.B.*, 1906, p. 288.

In the paper cited I referred to the specimen here described as the male of *Japalura yunnanensis*, Anderson, but having since had an opportunity of examining an example of that species and having partially dissected the one from Buxa, I find that the latter is a female and differs from the Chinese form. It may be described as follows :

Habit stout ; body moderately compressed ; size large.

Head triangular ; its dorsal surface sloping downwards and forwards from behind the eyes, slightly concave between the orbits ; scales of dorsal surface irregular, keeled, largest on snout ; 9 upper and 9 lower labials ; snout longer than diameter of eye, bluntly pointed. A small gular pouch, no transverse fold across the throat.

Scales of back and sides small, almost granular, mixed with much larger keeled scales which tend to be grouped in small patches ; no dorso-lateral rows of enlarged scales ; ventrals larger than largest dorsals, strongly keeled, imbricate, pointed behind ; scales on upper surface of limbs irregular in size, leaf-shaped, strongly keeled.

Crest.—A well-developed nuchal crest (in the female) consisting of upright lanceolate scales shorter than half the diameter of the eye rising from a fold of skin covered with almost granular scales ; no dorsal crest on the anterior half of back, a very slight one on the posterior half.

Limbs moderate. Adpressed hind limb reaches anterior border of orbit ; tibia about as long as skull ; third and fourth fingers equal.

Colouration.—Head dull olivaceous with two narrow brown crossbars on the dorsal surface, one just in front of, the other just behind the eye ; dark lines radiating from the eye ; lips with dark vertical bars ; sides of head irregularly marked with dark brown ; back and sides (in spirit) livid bluish-grey with a fine reticulation of dark brown ; tail obscurely barred ; limbs marked irregularly ; ventral surface yellowish ; a black patch on the gular pouch.

Total length	310 mm.
Length of head and body	110 ,,
Length of tail	200 ,,
Length of head	33 ,,
Length of fore limb	55 ,,
Length of hind limb	85 ,,

Locality.—Buxa, Jalpaiguri district, Bengal frontier of Bhutan.

Type.—No. 12564, Ind. Mus. (♀)

It is probable that this species inhabits the foot-hills of Bhutan, perhaps replacing *J. variegata* east of the R. Tista and being replaced by *J. andersoniana* at some unknown point situated still further east.

J. bengalensis is one of the largest species in the genus and easily surpasses either the Sikhim, the Dafla or the Khasi form in this respect. It is distinguished from the first (*J. variegata*) not only by its larger size but also by the nature of its crest, its colouration and scale-characters. From *J. planidorsata* the shape of its body will readily distinguish it, while its hind limbs are much shorter than in *J. andersoniana*.

Tropidophorus assamensis, sp. nov.

This species is closely related to *Tropidophorus cochinensis*, D. & B., from which it differs in its more slender form, shorter limbs, keeled ventrals, etc.

Habit slender ; cylindrical.

Head.—Snout sharply pointed, narrow, no longer than orbit. Dorsal scales strongly ridged ; a single fronto-nasal, which is almost as broad posteriorly as it is long ; praefrontals short, forming a median suture ; frontal shorter than fronto-parietals and interparietal together ; 4 supraoculars, the 1st and 4th longest ; 5 supraciliaries, 1st longest ; fronto-parietals longer than interparietal, forming a suture behind it ; 5 upper labials, 4th longest ; 3rd, 4th and 5th beneath eye ; an azygous mental ; tympanum smaller than eye-opening.

Scales, 30 round body, all strongly keeled and spinously produced ; ventrals largest ; throat scales not strongly keeled but ending in a sharp point posteriorly ; a pair of large praenanals ; dorsal and lateral tail-scales keeled ; ventral tail-scales smooth.

Limbs short but well-formed. Hind limb reaches wrist. Infra-digital lamellae smooth.

Tail cylindrical, tapering, longer than head and body.

Colouration.—Dorsal surface dark brown obscurely marbled with yellow, three cross-bars of latter colour ; one across hips, a second across shoulders and a third (less distinct than others) across back of neck ; tail rather darker, obscurely banded ; head brown ; sides and lips black with small white spots ; ventral surface yellowish ; small black spots on chin, throat and chest ; ventral surface of tail dark with an interrupted mid-ventral pale stripe, which becomes obscure distally, and numerous small yellowish spots.

Total length	90 mm.
Length of tail	51 ,,
Length of head	9 ,,
Breadth of head	5 ,,
Length of fore limb .	12 ,,
Length of hind limb .	14 ,,

Type.—No. 17029, Ind. Mus.

Locality.—Haraigaj range, 550 ft., Sylhet hills, Assam.

A single specimen was obtained by Mr. G. Mackrell, who ha kindly presented it to the Indian Museum. It differs widely from *T. beramorii*, of which we possess the type. *T. yunnanensis*, Boulenger, is in my opinion synonymous with the latter species, of which I have examined many Burmese specimens. The scales seem to vary greatly in the degree to which they are keeled and in some cases are quite smooth, while the number of longitudinal rows of scales is not by any means constant.